



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/802,268	03/17/2004	Hung-Shun Chao	24061.121 (TSMC2003.0710)	4207
42717	7590	04/13/2006	EXAMINER	
HAYNES AND BOONE, LLP 901 MAIN STREET, SUITE 3100 DALLAS, TX 75202			SUGLO, JANET L	
			ART UNIT	PAPER NUMBER
			2857	

DATE MAILED: 04/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/802,268

Applicant(s)

CHAO ET AL.

Examiner

Janet Suglo

Art Unit

2857

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 February 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 March 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The action is responsive to the Amendment filed on February 27, 2006. Claims 1-20 pending.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. **Claims 1-9** are rejected under 35 U.S.C. 102(e) as being anticipated by Wang (US Patent 6,789,031).

With respect to **claim 1**, Wang teaches a computer-executable method (col.3, ln 34-36) of establishing a process parameter (col 3, ln 17-18) for manufacturing a semiconductor product (col 3, ln 19-20) prior to receiving manufacturing feedback regarding the process parameter (Wang uses information from an established manufacturing plant to establish the boundaries for his process parameters, therefore he establishes his process parameter prior to receiving feedback: col 5, ln 32-34), the method comprising (Fig. 2):

identifying a technology to which the process parameter is related (col 3, ln 17-20);

identifying at least a first existing part manufactured using the identified technology (col 3, ln 23-28; col 5, ln 51-55);

retrieving information associated with the first existing part, wherein the information reflects feedback data obtained while manufacturing the first existing part (col 5, ln 29-30; col 6, ln 20-24);

and calculating the process parameter based on the retrieved information (col 5, ln 44-67; col 6, ln 25-28; col 7, ln 51-62).

With respect to **claim 2**, Wang further teaches including calculating a statistical value of the retrieved information (col 6, ln 25-26).

With respect to **claim 3**, Wang further teaches the statistical value being an average, and wherein the average is used as the process parameter (col 6, ln 25-27).

With respect to **claim 4**, Wang further teaches identifying a second existing part manufactured using the identified technology (col 2, ln 18-22; col 3, ln 17-20, ln 23-28; col 5, ln 51-55);

retrieving information associated with the second existing part, wherein the information reflects feedback data obtained while manufacturing the second existing part (col 5, ln 29-30; col 6, ln 20-24);

filtering out information associated with the first and second parts that fails to meet at least one predefined criterion (col 6, ln 58-59).

With respect to **claim 5**, Wang further teaches defining a range of acceptable information for use in filtering, wherein the predefined criterion defines a boundary of the range (col 6, ln 31-34, ln 58-60).

With respect to **claim 6**, Wang further teaches calculating a mean and a standard deviation of the information (col 3, ln 57-58).

With respect to **claim 7**, Wang further teaches an upper boundary of the range defined based on the mean plus the standard deviation (col 4, ln 10-14), and wherein a lower boundary of the range is defined based on the mean minus the standard deviation (col 4, ln 14-18).

With respect to **claim 8**, Wang further teaches the upper and lower boundaries recalculated a predefined number of times based on information not filtered out in the preceding calculation of the range (Fig. 3: 306).

With respect to **claim 9**, Wang teaches a method (col 3, ln 34-36) comprising establishing a process parameter (col 3, ln 17-18) for manufacturing a semiconductor product (col 3, ln 19-20) prior to receiving manufacturing feedback regarding the process parameter (Wang uses information from an established manufacturing plant to establish the boundaries for his process parameters, therefore he establishes his process parameter prior to receiving feedback: col 5, ln 32-34), and thereafter using the calculated process parameter in a manufacturing process to fabricate the semiconductor product (col 5, ln 44-47), the establishing of the process parameter including:

Art Unit: 2857

identifying a technology to which the process parameter is related (col 3, ln 17-20);

identifying at least a first existing part manufactured using the identified technology (col 3, ln 23-28; col 5, ln 51-55);

retrieving information associated with the first existing part, wherein the information reflects feedback data obtained while manufacturing the first existing part (col 5, ln 29-30; col 6, ln 20-24);

and calculating the process parameter based on the retrieved information (col 5, ln 44-67; col 6, ln 25-28; col 7, ln 51-62).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claims 10-20** are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang (US Patent 6,789,031) in view of Skidmore (US 6,622,102).

With respect to **claim 10**, Wang teaches a method for execution on a computer (col 3, ln 34-36) for determining a process parameter value to be used in manufacturing a semiconductor product (col 5, ln 44-47) prior to receiving feedback regarding the manufacturing, wherein the process parameter is associated with a specific technology

Art Unit: 2857

(col 3, ln 17-20; col 5, ln 32-34), the method comprising: calculating a mean of at least a selected data related to each part identifier; and using the mean as the process parameter (col 5, ln 44-47; col 6, ln 25-27; col 8, ln 32-33). Wang does not teach selecting one or more part identifiers representing parts based on the technology. Skidmore teaches using part identifiers specific to individual IC parts to construct data summaries (Skidmore: col 3, ln 20-24). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Wang to include the part identifiers of Skidmore because they would produce a more accurate, detailed, and useful database (Skidmore: col 1, ln 38-39).

With respect to **claim 11**, Wang further teaches calculating a range (col 6, ln 31-34, ln 58-60); and recalculating the mean using only selected data related to each part identifier that is within the range (col 4, ln 23-35).

With respect to **claim 12**, Wang further teaches calculating a standard deviation of the selected data (col 3, ln 57-58);

calculating an upper boundary of the range as the mean plus the standard deviation (col 4, ln 10-14); and

calculating a lower boundary of the range as the mean minus the standard deviation (col 4, ln 14-18).

With respect to **claim 13**, Wang further teaches multiplying the standard deviation by a constant value when calculating the upper and lower boundaries (col 4, ln 8-18).

With respect to **claim 14**, Wang further teaches defining a total number of calculations to be performed, wherein the total number identifies a number of times that the mean is to be calculated after part identifiers are filtered out using the range (Fig. 3: 306).

With respect to **claim 15**, Wang further teaches assigning the specific technology to the process parameter (col 3, ln 17-33)

With respect to **claim 16**, Wang teaches a system for determining a process parameter value to be used in manufacturing a semiconductor product (col 5, ln 44-47) prior to receiving feedback regarding the manufacturing (col 5, ln 32-34), the system comprising: a semiconductor fabrication tool configured to execute a fabrication process (col 3, ln 1-2) using the process parameter value (col 4, ln 29-30), wherein the process is associated with a specific technology (col 5, ln 44-47). instructions for calculating a statistical value of the retrieved information (col 6, ln 25-26); and instructions for defining the process parameter value based on the statistical value (col 5, ln 44-47; col 6, ln 1-5). Wang does not teach the inclusion of a database. Skidmore teaches a database configured to store information identifying a plurality of parts and associated manufacturing information, wherein each part is associated with a technology and wherein the manufacturing information reflects feedback data obtained by manufacturing the parts (Skidmore: col 3, ln 42-48); and a plurality of software instructions including (col 3, ln 57-58): instructions for identifying one or more parts from the database having the same technology as the process (Skidmore: col 3, ln 20-23; ln 45-48); instructions for retrieving at least a portion of the manufacturing information

Art Unit: 2857

associated with the identified parts from the database (Skidmore: col 3, ln 16-20). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Wang to include the database of Skidmore because the database of information is used to improve the manufacturing process by identifying failure trends based upon process variations (Skidmore: abstract, ln 9-11).

With respect to **claim 17**, Wang further teaches instructions for calculating a range (col 6, ln 31-34, ln 58-60); and instructions for recalculating the statistical value using only selected data related to each part identifier that is within range (col 4, ln 23-35).

With respect to **claim 18**, Wang further teaches the statistical value is a mean (col 6, ln 25-27) and wherein the instructions for calculating the range include:

instructions for calculating a standard deviation of the selected data col 3, ln 57-58);

instructions for calculating an upper boundary of the range using the mean plus the standard deviation (col 4, ln 10-14); and

instructions for calculating a lower boundary of the range using the mean minus the standard deviation (col 4, ln 14-18).

With respect to **claim 19**, Wang further teaches multiplying the standard deviation by a predefined constant when calculating the upper and lower boundaries (col 4, ln 8-18).

With respect to **claim 20**, Wang further teaches applying the process parameter value to the fabrication process (col 3, ln 1-2).

Response to Arguments

1. Applicant's arguments filed February 27, 2006 have been fully considered but they are not persuasive.

Applicant argues that Wang does not teach a process parameter; however, applicant's arguments are not well taken. Wang teaches in his method to "identify one or more variable parameters that are characteristic of the IC *manufacturing process* that can be measured from a product manufactured with the process." (Wang: col 3, ln 17-20) in the same way that the Applicant claims "establishing a process parameter for manufacturing a semiconductor product" including "identifying at least a first existing part manufactured using the identified technology; retrieving information associated with the first existing part" and "calculating the process parameter based on the retrieved information." (claims 1 and 9 of the Application; similar limitations in claims 10 and 16). Both the Applicant and Wang are using information gathered from a part being manufactured in order to establish the process parameter within a semiconductor (i.e. IC) fabrication process.

Conclusion


2. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janet Suglo whose telephone number is 571-272-8584. The examiner can normally be reached on weekdays from 8:00am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc Hoff can be reached on 571-272-2216. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Janet L Suglo
April 3, 2006


MARC S. HOFF
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800